

# ZERO CARBON DEFINITION OFFERS A NEW PRACTICAL APPROACH

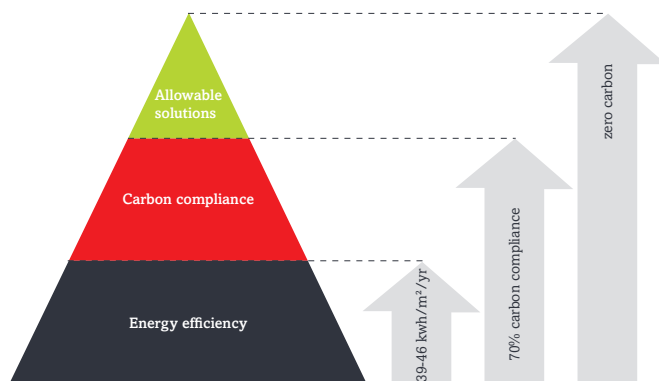


*“The emerging definition of zero carbon starts to suggest that the current Code Level 6 ambition for the future of house building will be superseded by a more practical and commercially balanced approach.”* Matt Fulford - Head of Sustainability

On 24 November 2009 Housing Minister John Healey re-confirmed that all new homes built in the UK from 2016 will be zero carbon.

His announcement also starts to set the boundaries for the Government’s ‘zero carbon triangle’ which will ultimately define the 2016 zero carbon requirements. The triangle’s three components are - Energy Efficiency; Carbon Compliance; and Allowable Solutions.

Figure 1. Zero carbon hierarchy



Recent announcements have fixed levels for the first two components and this allows us to reassess the cost and practical implications of achieving zero carbon in the future

## Energy Efficiency

‘Energy Efficiency’ is the level which will have to be achieved within the passive design of each house and is in effect the first step to achieve zero carbon. The objective will be to construct homes to a minimum fabric standard which is 20%-25% improved on current 2006 Part L Regulations. In effect this will be the standard introduced in the 2010 Part L update, except that they must be met by fabric efficiencies and not by renewables.

Practically, delivering to these efficiency standards on site will be a challenge. The increased and demanding air-tightness and thermal bridging requirements in particular are going to require a level of detail and understanding not currently delivered by the main-stream supply chain. Naturally suitable products will therefore initially come at a cost premium.

Those designing schemes which will fall under the 2010 Part L update or seeking funding from HCA in the next round would be wise to consider these design standards now. Equally the standard house types and specifications from major house builders should start to be developed to meet these requirements.

*“Astute house builders will see opportunity in the new definition, with commercial advantage gained by selecting sites and design solutions which allow on site renewable costs to be minimised.”*

**Technical requirements to meet new energy efficiency standards:**

U values for walls	0.18 W/m <sup>2</sup> K
U values for floors	0.18 W/m <sup>2</sup> K
U values for roof	0.13 W/m <sup>2</sup> K
U values for windows	1.4 W/ m <sup>2</sup> K
Air leakage	3 m <sup>3</sup> /m <sup>2</sup> /hr @50pa
Thermal bridging Y-value	0.05 W/ m <sup>2</sup> K

## Carbon Compliance

The ‘Carbon Compliance’ level will set how much of the carbon emissions will have to be dealt with on site.

Back in July 2009 the Housing Minister announced that the ‘Carbon Compliance’ level would be set at 70% of regulated CO<sub>2</sub> emissions following the zero carbon consultation. The now announced minimum fabric efficiencies will produce a 25-30% reduction leaving a 45-50% requirement for on-site renewables.

This represents a challenging level but somewhat less challenging than the 120% level of renewables that would be required within Code Level 6. In effect what has now been created is a Code Level 4 ½, which bridges the huge gap between the Code Level 4 and 5 targets.

## Allowable Solutions

The remaining emissions (between 70% and full zero carbon) are expected to be dealt with as ‘Allowable Solutions’ which will require a local and highly defined ‘offset’ payment to be made for dealing with remaining carbon emissions off-site. Further details will be announced by the Government on this element in the near future. This off-site solution does not feature at all in the current Code 6.

## The true cost of Zero Carbon

The revised cost of complying with the new zero carbon definition will depend on the value attributed to the ‘Allowable Solution’ and also the renewable strategy adopted to deliver the 45-50% renewables.

However, the fabric efficiencies have been reported as adding between £2,000 -£6,500 per unit and the renewables requirement is likely to add around £15,000 per unit. This results in an additional build cost of £20,000 per unit but represents half the previous £40,000 estimate to deliver the full Code Level 6 definition.

Astute house builders will therefore see opportunity in the new definition, with commercial advantage gained by selecting sites and design solutions which allow on site renewable costs to be minimised either through connection with district heating or large scale wind coupled with the use of an ESCO. Renewable availability of a site must now be considered in land acquisition and existing land banks reviewed.

It is expected that the Code will be revised to embrace this revised definition. In the meantime those currently reviewing an ambition to reach Code Levels 5 and 6 would be prudent to design to the 39 / 46 kilowatt-hours per square metre per year requirements with 70% carbon compliance and await the detail.

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